

Mounted at /content/drive

	CustomerID	Gender	Age	Annual Income (k\$)	Spending Score (1-100)
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40

(200, 5)

Choosing the Annual Income Column & Spending Score column

Choosing the number of clusters

WCSS -> Within Clusters Sum of Squares

Optimum Number of Clusters = 5

Training the k-Means Clustering Model

5 Clusters - 0, 1, 2, 3, 4

Visualizing all the Clusters

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 200 entries, 0 to 199

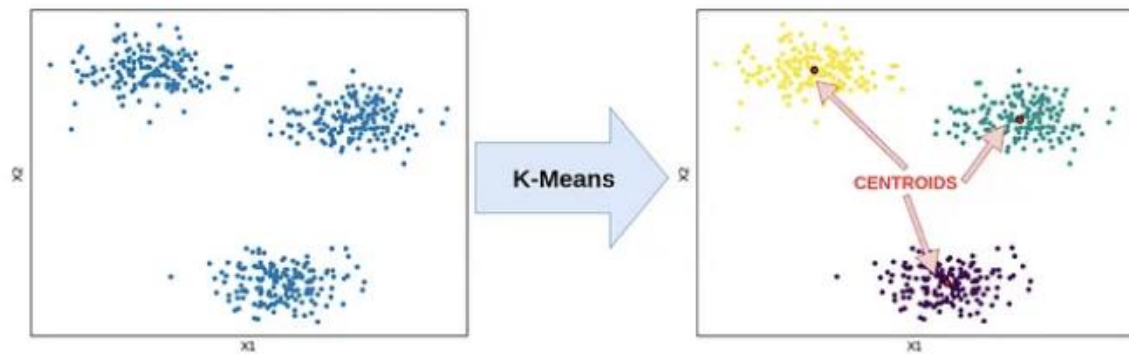
Data columns (total 5 columns):

#	Column	Non-Null Count	Dtype
0	CustomerID	200 non-null	int64
1	Gender	200 non-null	object
2	Age	200 non-null	int64
3	Annual Income (k\$)	200 non-null	int64
4	Spending Score (1-100)	200 non-null	int64

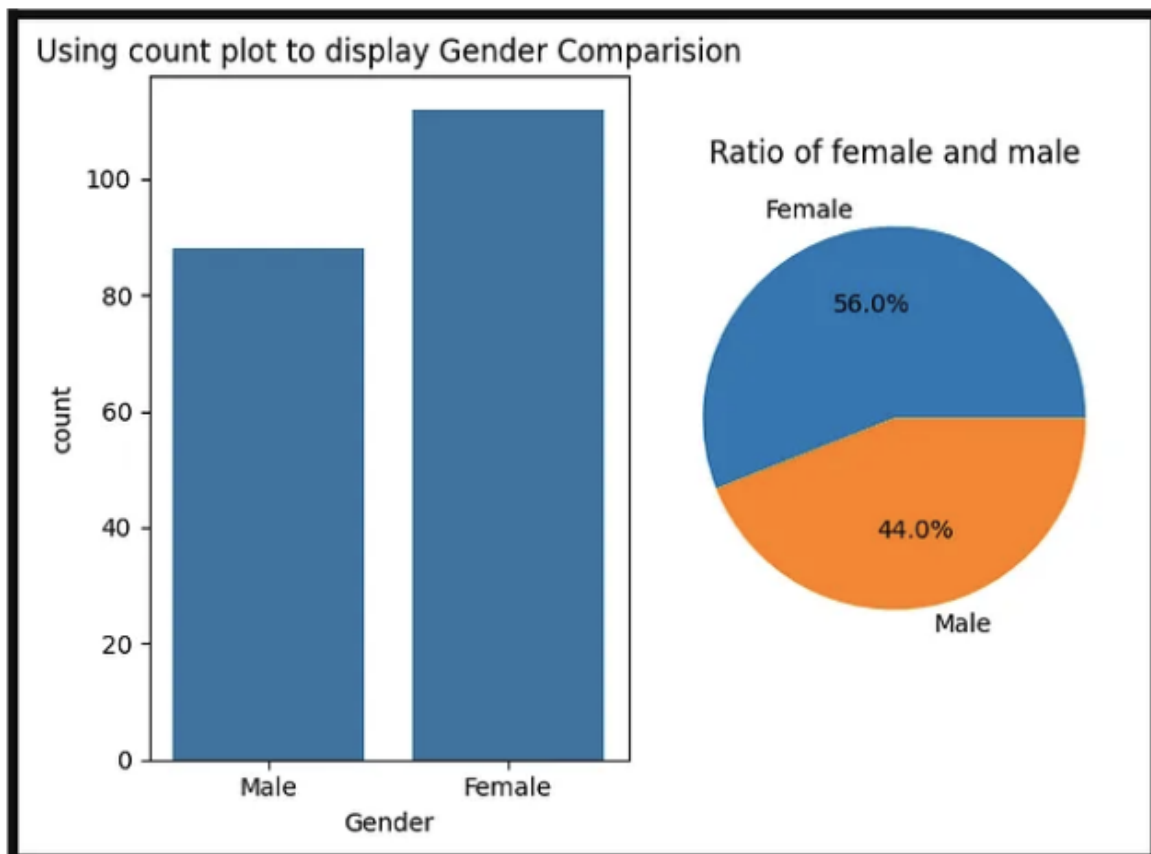
dtypes: int64(4), object(1)

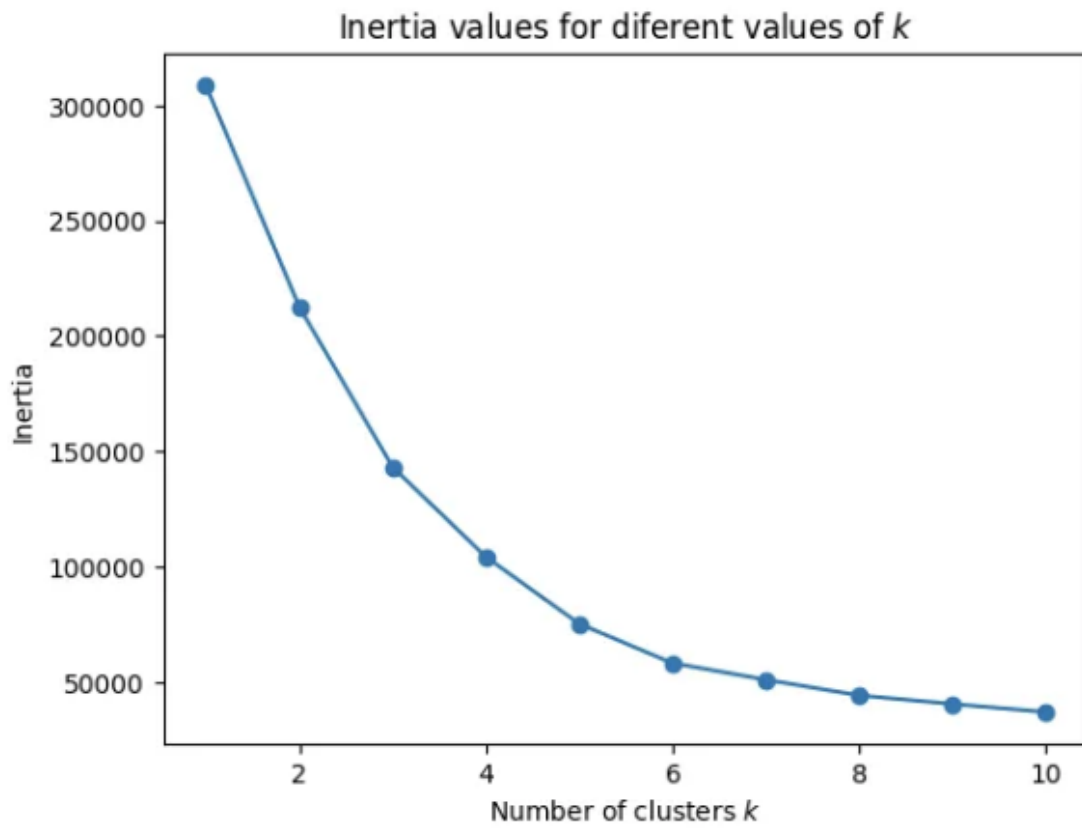
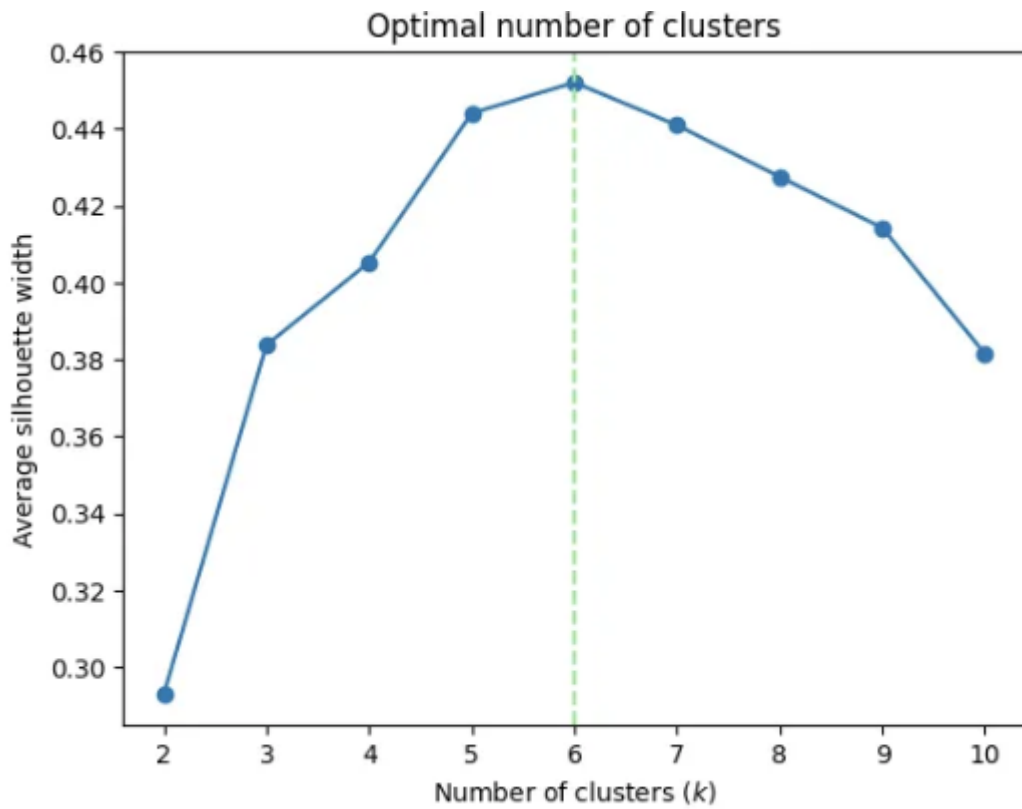
memory usage: 7.9+ KB

1 2 1 2 1 2 1 2 1 2 1 2 1]



A set of data points (Left) and the same points assigned to individual clusters (Right). The red dots represent the clusters centroids.





CustomerIDCustomerID,Gender,Age,Annual Income (k\$),Spending Score (1-100)

1,Male,19,15,39

2, Male, 21, 15, 81
3, Female, 20, 16, 6
4, Female, 23, 16, 77
5, Female, 31, 17, 40
6, Female, 22, 17, 76
7, Female, 35, 18, 6
8, Female, 23, 18, 94
9, Male, 64, 19, 3
10, Female, 30, 19, 72
11, Male, 67, 19, 14
12, Female, 35, 19, 99
13, Female, 58, 20, 15
14, Female, 24, 20, 77
15, Male, 37, 20, 13
16, Male, 22, 20, 79
17, Female, 35, 21, 35
18, Male, 20, 21, 66
19, Male, 52, 23, 29
20, Female, 35, 23, 98
21, Male, 35, 24, 35
22, Male, 25, 24, 73
23, Female, 46, 25, 5
24, Male, 31, 25, 73
25, Female, 54, 28, 14
26, Male, 29, 28, 82
27, Female, 45, 28, 32
28, Male, 35, 28, 61
29, Female, 40, 29, 31
30, Female, 23, 29, 87
31, Male, 60, 30, 4

32,Female,21,30,73
33,Male,53,33,4
34,Male,18,33,92
35,Female,49,33,14
36,Female,21,33,81
37,Female,42,34,17
38,Female,30,34,73
39,Female,36,37,26
40,Female,20,37,75
41,Female,65,38,35
42,Male,24,38,92
43,Male,48,39,36
44,Female,31,39,61
45,Female,49,39,28
46,Female,24,39,65
47,Female,50,40,55
48,Female,27,40,47
49,Female,29,40,42
50,Female,31,40,42
51,Female,49,42,52
52,Male,33,42,60
53,Female,31,43,54
54,Male,59,43,60
55,Female,50,43,45
56,Male,47,43,41
57,Female,51,44,50
58,Male,69,44,46
59,Female,27,46,51
60,Male,53,46,46
61,Male,70,46,56

62, Male, 19, 46, 55
63, Female, 67, 47, 52
64, Female, 54, 47, 59
65, Male, 63, 48, 51
66, Male, 18, 48, 59
67, Female, 43, 48, 50
68, Female, 68, 48, 48
69, Male, 19, 48, 59
70, Female, 32, 48, 47
71, Male, 70, 49, 55
72, Female, 47, 49, 42
73, Female, 60, 50, 49
74, Female, 60, 50, 56
75, Male, 59, 54, 47
76, Male, 26, 54, 54
77, Female, 45, 54, 53
78, Male, 40, 54, 48
79, Female, 23, 54, 52
80, Female, 49, 54, 42
81, Male, 57, 54, 51
82, Male, 38, 54, 55
83, Male, 67, 54, 41
84, Female, 46, 54, 44
85, Female, 21, 54, 57
86, Male, 48, 54, 46
87, Female, 55, 57, 58
88, Female, 22, 57, 55
89, Female, 34, 58, 60
90, Female, 50, 58, 46
91, Female, 68, 59, 55

92, Male, 18, 59, 41
93, Male, 48, 60, 49
94, Female, 40, 60, 40
95, Female, 32, 60, 42
96, Male, 24, 60, 52
97, Female, 47, 60, 47
98, Female, 27, 60, 50
99, Male, 48, 61, 42
100, Male, 20, 61, 49
101, Female, 23, 62, 41
102, Female, 49, 62, 48
103, Male, 67, 62, 59
104, Male, 26, 62, 55
105, Male, 49, 62, 56
106, Female, 21, 62, 42
107, Female, 66, 63, 50
108, Male, 54, 63, 46
109, Male, 68, 63, 43
110, Male, 66, 63, 48
111, Male, 65, 63, 52
112, Female, 19, 63, 54
113, Female, 38, 64, 42
114, Male, 19, 64, 46
115, Female, 18, 65, 48
116, Female, 19, 65, 50
117, Female, 63, 65, 43
118, Female, 49, 65, 59
119, Female, 51, 67, 43
120, Female, 50, 67, 57
121, Male, 27, 67, 56

122,Female,38,67,40
123,Female,40,69,58
124,Male,39,69,91
125,Female,23,70,29
126,Female,31,70,77
127,Male,43,71,35
128,Male,40,71,95
129,Male,59,71,11
130,Male,38,71,75
131,Male,47,71,9
132,Male,39,71,75
133,Female,25,72,34
134,Female,31,72,71
135,Male,20,73,5
136,Female,29,73,88
137,Female,44,73,7
138,Male,32,73,73
139,Male,19,74,10
140,Female,35,74,72
141,Female,57,75,5
142,Male,32,75,93
143,Female,28,76,40
144,Female,32,76,87
145,Male,25,77,12
146,Male,28,77,97
147,Male,48,77,36
148,Female,32,77,74
149,Female,34,78,22
150,Male,34,78,90
151,Male,43,78,17

152, Male, 39, 78, 88
153, Female, 44, 78, 20
154, Female, 38, 78, 76
155, Female, 47, 78, 16
156, Female, 27, 78, 89
157, Male, 37, 78, 1
158, Female, 30, 78, 78
159, Male, 34, 78, 1
160, Female, 30, 78, 73
161, Female, 56, 79, 35
162, Female, 29, 79, 83
163, Male, 19, 81, 5
164, Female, 31, 81, 93
165, Male, 50, 85, 26
166, Female, 36, 85, 75
167, Male, 42, 86, 20
168, Female, 33, 86, 95
169, Female, 36, 87, 27
170, Male, 32, 87, 63
171, Male, 40, 87, 13
172, Male, 28, 87, 75
173, Male, 36, 87, 10
174, Male, 36, 87, 92
175, Female, 52, 88, 13
176, Female, 30, 88, 86
177, Male, 58, 88, 15
178, Male, 27, 88, 69
179, Male, 59, 93, 14
180, Male, 35, 93, 90
181, Female, 37, 97, 32

182,Female,32,97,86
183,Male,46,98,15
184,Female,29,98,88
185,Female,41,99,39
186,Male,30,99,97
187,Female,54,101,24
188,Male,28,101,68
189,Female,41,103,17
190,Female,36,103,85
191,Female,34,103,23
192,Female,32,103,69
193,Male,33,113,8
194,Female,38,113,91
195,Female,47,120,16
196,Female,35,120,79
197,Female,45,126,28
198,Male,32,126,74
199,Male,32,137,18
200,Male,30,137,83